The Examiner has requested that Applicant offer to surrender the original patent. Applicant will surrender the original patent when the Examiner has indicated that the application, including all pending claims, is in a condition for allowance.

The Examiner objected to claim 36 because of an informality related to a misspelled word. Claim 36 has been amended to correct this informality.

The Examiner rejected claims 42, 45 and 46 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter, which applicant regards as the invention. Claims 42, 45 and 46 have been amended to more particularly point out and distinctly claim the subject matter, which applicant regards as the invention.

The Examiner rejected claims 1, 2, 4, 11, 12, 36-38, and 40-56 under 35 U.S.C. 102(b) as being anticipated by Yoneyama *et al.* Applicant respectfully traverses these rejections.

Independent claim 1 recites:

> "1. (Unchanged) An apparatus for rotating a display orientation of captured image data representative of an object, the apparatus comprising:
>
> ...
>
> a memory, having an auto-rotate unit comprising program instructions for selectively transforming said captured image data into rotated image data in response to said position signal, said memory coupled to said image sensor and to said orientation sensor; and
>
> ...
>
> wherein (a) said image processing unit processes an i-by-j array of said captured image data and said image sensor generates an i+1-by-j+1 array of said image data, or (b) an image capture unit generates an additional row and column of pixels for said captured image data from said image sensor."

Independent claim 11 recites:

"11. A method for rotating a display orientation of image data representative of an object, comprising the steps of:

...

selectively transferring data to an image processing unit in response to the identifying step;

wherein said image processing unit rotates said display orientation of said image data and (a) said image processing unit processes an i-by-j array of said captured image data and said image sensor generates an i+1-by-j+1 array of said image data, or (b) an image capture unit generates an additional row and column of pixels for said captured image data from said image sensor."

Independent claim 36 recites:

"36. (Amended) An apparatus for rotating a display orientation of captured image data representative of an object, the apparatus comprising:

...

a memory, having an auto-rotate unit for selectively transforming said captured image data into rotated image data in response to said orientation signal from said input device; and

an image processing unit coupled to said memory for processing the image data;

...

."

Independent claim 37 recites:

"37. (Unchanged) A digital image capture device, comprising:

an image sensor, for generating image data;

...

an auto-rotate unit coupled to the image sensor and the orientation sensor, for automatically rotating the image data in response to the orientation signal."

Independent claim 40 recites:

"40. (Unchanged) A method of rotating image data in a digital image capture device, comprising:

...

automatically rotating the captured image data in response to the orientation signal."

Independent claim 43 recites:

"43. (Unchanged) A computer-readable medium having stored thereon instructions which, when executed by a processor, cause the processor to perform the steps of:

...

automatically rotating the captured image data in response to the orientation signal."

Independent claim 46 recites:

"46. (Amended) A digital image capture device, comprising:
image sensor means for generating image data;

...

means for automatically rotating the image data in response to the orientation signal."

These claimed features enable a digital image capture device to efficiently and automatically rotate digital image data prior to being processed by an onboard image processor.

Yoneyama discloses a video camera that corrects for image slant by generating memory addresses for reading video signals from memory devices based on slant information derived from a slant detector. Col. 1, lines 37-63. Yoneyama fails, however, to disclose or suggest "an auto-rotate unit comprising program instructions for selectively transforming said captured image data into rotated image data in response to said position signal" (Claim 1), "selectively transferring data to an image processing unit in response to the identifying step" (Claim 11), "an auto-rotate unit for selectively transforming said captured image data into rotated image data in response to said orientation signal from said input device" (Claim 36), "an auto-rotate unit coupled to the image sensor and the orientation sensor, for automatically rotating the image data in response to the orientation signal" (Claim 37), "automatically rotating the captured image data in response to the orientation signal" (Claim 43), and "means for automatically rotating the image data in response to the orientation signal" (Claim 46) (emphasis added).

The Examiner has cited the coordinate axis converter 16 as including the claimed memory, auto-rotate unit and image processor. Applicant respectfully disagrees.

As can be seen from Figures 1, 2, 4 and 8, the image data never passes through the coordinate axis converter 16, and therefore is not rotated by the coordinate axis converter 16. Additionally, there is no image processing performed in the video camera – just selection of video signals stored in memory 10 (a different memory than memory 9), which data is provided to output terminal 7. The coordinate axis converter 16 effects rotation by controlling the reading of stored video signals from memory 10 and not by transforming the captured image data into rotated image data. The "slanted" image is stored in memory 10 and corrected at the time it is read out of memory 10 to output terminal 7. Thus, any image processing would presumably be performed outside the video camera because that is where the corrected video signals are sent. This concept is clearly expressed in col. 3, lines 37-57:

> "Accordingly, the image in FIG. 10 (A) is once stored in the memory device 10, and according to the slant information delivered from the slant detector 8, it is controlled and read out by the memory control unit 9. In other words, as shown in FIG. 10(B), supposing the arrow (2) to be the reading direction which has been slant corrected, by reading out the video signal in the direction of (2) from the memory device 10, a normal signal without slant is obtained as the output signal from the camera device as shown in FIG. 10 (C)."

By contrast, Applicant's claimed invention includes the step of "selectively transforming said captured image data into rotated image data in response to said position signal" so it can be correctly processed by an image processor located in the apparatus (e.g., in the digital camera), thus facilitating onboard image processing on corrected image data.

The failure of the cited reference to show or suggest each and every element of claims 1, 11, 36, 37, 40, 43 and 46 vitiates any basis for rejection under 35 U.S.C. 102(b). Applicant respectfully requests withdrawal of the rejections of claims 1, 11, 36, 37, 40, 43 and 46, and allowance of claims 1, 11, 36, 37, 40, 43 and 46.

Claims 2-8, 12-20, 41-42, 44-45 depend from claims 1, 11, 40 and 43, respectively, and include all the limitations of claims 1, 11, 40 and 43. Therefore, claims 2-8, 12-20, 41-42, 44-45 are allowable for at least the same reasons as claims 1, 11, 40 and 43, and for the additional

subject matter contained therein. Applicant respectfully requests withdrawal of the rejections of claims 2-8, 12-20, 41-42, 44-45 and allowance of claims 2-8, 12-20, 41-42, 44-45.

The Examiner rejected claims 21, 22, 28, 29 and 35 under 35 U.S.C. 103(a) as being unpatentable over Yoneyama and claims 13, 23 and 30, as being unpatentable over Yoneyama in view of Tabei *et al.* Applicant respectfully traverse these rejections.

Independent claim 21 recites:

"21. (Unchanged) An apparatus for rotating a display orientation of multicolor image data having an i-by-j pixel matrix with a pattern representative of an object, comprising:

means for generating multicolor image data with an image sensor;

orientation sensor means for identifying an orientation of said image sensor relative to said object at a time substantially simultaneous with said generating said multicolor image data; and

means for selectively transferring said multicolor image data to an image processing unit in response to said means for identifying;

wherein said image processing unit rotates said display orientation of said multicolor image data for providing rotated multicolor image data, and changes the number of pixel rows and pixel columns of said multicolor image data such that, from a defined referenced viewpoint, said rotated multicolor image data includes having an (i-1)-by-(j-1) pixel matrix said pattern."

Independent claim 28 recites:

"28. (Unchanged) A computer useable medium embodying computer readable program code for causing a computer to rotate a display orientation of multicolor image data having an i-by-j pixel matrix with a pattern representative of an object, by performing steps comprising:

generating said multicolor image data with an image sensor;

identifying an orientation of the image sensor relative to the object at a time substantially simultaneous with the generating step, wherein said identifying of said orientation is performed with an orientation sensor; and

selectively transferring image data to an image processing unit in response to the identifying step,

wherein said image processing unit rotates said display orientation of said multicolor image data for providing rotated multicolor image data, and changes the number of pixel rows and pixel columns of said multicolor image data such that, from a defined referenced viewpoint, said rotated multicolor image data includes having an (i-1)-by-(j-1) pixel matrix said pattern."

Independent claim 35 recites:

"35. (Unchanged) An apparatus for rotating a display orientation of multicolor captured image data having an i-by-j pixel matrix with a pattern representative of an object, comprising:

an image sensor, for generating said multicolor captured image data;

an orientation sensor coupled to said image sensor, for generating a signal corresponding to the position of said image sensor relative to said object; and

a hardware device, having an auto-rotate unit comprising circuits for selectively transforming said multicolor captured image data into rotated multicolor image data in response to said position signal, said hardware device coupled to said image sensor and to said orientation sensor;

wherein, from a defined referenced viewpoint, said rotated multicolor image data includes an (i-1)-by-(j-1) pixel matrix having said pattern."

As correctly stated by the Examiner, Yoneyama is silent with regard to using multicolor image data and defect-correcting means. The arguments made above for claims 1, 11, 36, 37, 40, 43 and 46 also apply to claims 21, 28 and 351.

In Yoneyama, the image data never passes through the coordinate axis converter 16, and therefore is not rotated by the coordinate axis converter 16. The coordinate axis converter 16 effects rotation by controlling the reading of video signals from memory 10 and not by rotating the image data. Thus, the "slanted" image is stored in memory 10 and corrected at the time it is read out of memory 10 to output terminal 7. Thus, any image processing would have to be performed outside the video camera because that is where the corrected video signals are sent.

Yoneyama fails to disclose or suggest where an "image processing unit rotates said display orientation of said multicolor image data for providing rotated multicolor image data" (Claims 21 and 28) or "an auto-rotate unit comprising circuits for selectively transforming said

multicolor captured image data into rotated multicolor image data in response to said position signal" (Claim 35).

By contrast, Applicant's claimed invention rotates the image data so it can be correctly processed by an image processor located in the apparatus (e.g., in the digital camera), thus facilitating onboard image processing on corrected image data.

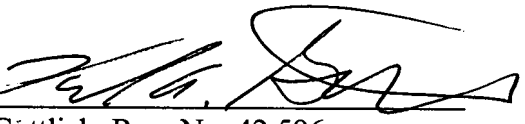
The failure of the cited references to show or suggest each and every element of claims 21, 28 and 35 vitiates any basis for rejections under 35 U.S.C. 102(b) or 103(a). Applicant respectfully requests withdrawal of the rejections of claims 21, 28 and 35, and allowance of claims 21, 28 and 35.

Claims 22-27 and 29-34 depend from claims 21 and 28 respectively, and include all the limitations of claims 21 and 28. Therefore, claims 22-27 and 29-34 are allowable for at least the same reasons as claims 21 and 28, and for the additional subject matter contained therein. Applicant respectfully requests withdrawal of the rejections of claims 22-27 and 29-34, and allowance of claims 22-27 and 29-34.

Applicant submits that this application, including all pending claims, is now in condition for allowance. Reconsideration and allowance of this application is hereby solicited.

Respectfully submitted,
ERIC C. ANDERSON

Dated: January 14, 2003

By: 

Kirk A. Gottlieb, Reg. No. 42,596
Attorney for Applicant
Silicon Valley Center
801 California Street
Mountain View, CA 94041
Tel.: (415) 875-2414
Fax: (415) 281-1350